DOCUMENT RESUME

ED 265 955 PS 015 616

AUTHOR Cole, Michael
TITLE A Socio-Cultural Approach to the Study of Re-Mediation.
PUB DATE Apr 83
NOTE 19p.; In: New Directions in Studying Children. Speeches from the Conference of the Erikson Institute (Chicago, IL, April 29-30, 1983)--see PS 015 612.
PUB TYPE Collected Works - Conference Proceedings (021) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Child Development; *Cognitive Development; *Cultural Influences; *Language Skills; *Literacy; *Remedial Reading; Student Improvement; Systems Approach; *Teacher Role; Theories
IDENTIFIERS *Interpretation; Theoretic Orientation; Vygotsky (Lev S)

ABSTRACT

The basic character of literacy is the creation of objects to regulate interactions with the physical and social worlds. "Remediation" means a shift in the way that mediating devices regulate coordination with the environment. If research on reading is to make a difference, it will have to start with an understanding of how contemporary social-historical contexts shape the nature of instruction and the production of school failure. Current data show how, without special cultural support systems, the individual teacher is at an enormous disadvantage in trying to get a student over the major misunderstanding that reading is reading individual words so that they sound right. Reading is a process of interpreting the world. Current research using an interpretive model has produced remarkable changes in the reading ability of seventh grade students. But the system of remediation most commonly used is one that goes back to the system of the basic unit again. Instead of basic skills, a socio-cultural approach to reading talks about basic activities and instantiates those needed to carry out the whole process of reading in the general conditions for learning. When such lesson contexts are created, children can learn to read who otherwise couldn't be taught. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED265955

A SOCIO-CULTURAL APPROACH TO THE STUDY OF RE-MEDIATION

Michael Cole, Ph.D.
Professor of Psychology and Communications
Director of the Laboratory for Comparative Human Development
University of California at San Diego

PS 015616

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Lorraine B. Wallach
Erickson Inst.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Thank you very much. This morning I overheard a conversation where somebody was reporting an overheard conversation, that went sort of like: "Who's that Russian they are talking about? Vic who?" Vygotsky is his name. The formal title of my talk is "Socio-Historical Approach to the Study of Re-Mediation." Lev S. Vygotsky founded that school. What I want to do is give a little bit of background about why I would be standing up here saying strange words like that and why I think his ideas, and those of his followers, are of practical interest. I will end up trying to talk about how these ideas might apply to children who are having extraordinary difficulty learning to read in our schools.

I want to get to modern reading instruction shortly, but let me back up and describe what it means to adopt a socio-historical approach to literacy. First, this approach emphasizes that we are talking about uniquely human characteristics of human behavior, ones which are not likely to have been invented spontaneously or be directly related to our near animal neighbors. Whatever else there is about reading and writing, if you grew up and lived for a long time on an island with no reading or writing and no one had ever heard of it, and you were there by yourself, it is extremely unlikely that you would invent the alphabet. It took about ten thousand years and one individual is not likely to get it done in a lifetime. Aspects of human behavior with a long social history are higher psychological functions. They arose a long time ago, they were there in some form at the dawning of homo sapiens, and they have been changed in social interactions as a result of historically accumulated experience.

Now, let me apply that mouthful to the notion of reading and writing. On the one hand, you can argue that the existence of writing as a function is about two or three thousand years old, depending upon how you measure it. Writing is definitely a "new" human acquisition so you wouldn't go looking in the brain for a particular writing area if writing was hurt by some kind of a brain deficit. The socio-historical approach pushes you to go deeper into the past, trace the basis of literacy all the way back to the

beginning; we could go back to Australopithecus, perhaps 300-400 thousand years ago, where you have the first evidence that somehow people are regulating their interactions with the world and each other using pieces of the world external to themselves. That is the basic property of reading and writing. The basic act of mediation involves regulating your interactions with the world indirectly...through objects that are artificial, made by human hands. It may be as simple as a mark on a stone that regulates when you meet somebody; it may be a mark on a stick to remind you you've done something before. In each case, that simple mark reorganizes your coordination with the world by virtue of its properties as a mediator. There are many early remnants of this early manifestation of pre-writing. If you go to the caves at Lascaux, if you go through all of Alexander Marschak's work on ice age people, you'll find that the activity of mediation through external signs is as old as homo sapiens. If you stop for a moment and think about Stonehenge, you might begin to ponder about the fact that very big rocks, were carried a very long way by people with no trucks or trains. Those were people who really cared. They weren't carrying those rocks for their own sakes, I guarantee you. They were carrying them because they were told that if they arranged those rocks in a certain way they could discover regularities in the universe that would allow them to predict what was going to happen next, and roughly when it would happen.

If you go down in the desert south of San Diego you'll come upon remarkable places that have this same property. On the winter solstice and only on that day, the sun rises over a particular hill. Its light slices through a particular slit in a rock where there's a drawing of a human; on another rock opposite, there is a drawing of another human. The first human has a dagger raised in his hand, and just at sunrise on that day, the sun creeps across the rock and hits the dagger. It bounces off and hits the other man. An enormous amount of human ingenuity went into figuring that out. We believe that those rock pictures, like Stonehenge, regulated peoples' interactions with the world and with each other. To repeat myself, the basic character of literacy is that we create objects to

regulate our interactions on the one hand with the physical world, and on the other hand, with our social world. Literacy then makes possible new forms coordinating in time and space. Objects mediating our interactions with the world make available the potential for new forms of higher psychological processes.

Technologies of Mediation

What's remediation all about in such a system? Well, in its root meaning, remediation means a shift in the way that mediating devices regulate coordination with the environment. A very interesting early sample of such a shift historically came when syllabaries were replaced by an alphabet. A shift from a syllabary to an alphabet creates a representation of language at a level of analysis which is qualitatively new. Alphabets make possible explicitness that can have powerful potentiating effect on people's ability to regulate their activities with each other and, as we say, to create common knowledge.

Again, if you are taking a socio-historical approach, the beginning of symbol systems that eventuate in the alphabet goes back to the initial exchange using money. The alphabet can be traced in the Middle East through simple token systems, to the bronze age with the evolution of multiple tokens scratched in clay, and then to the Phoenician syllabary. When the Greeks tried to trade through this syllabary, they ran into ambiguities which forced them to do some analysis on what the syllabary was about. This led to the fundmental breakthrough which is now the bane of lots of children in our society: the breakthrough from representing language at the level of directly communicable sound elements (syllables) to communicating through a medium in which you can not explicitly make clear what it is that you are doing (the alphabet). In order to make this difference clear, let's look at how we teach a child to say the word 'cat.' In societies where 'cat' is written as a syllable, it is represented by one sign which simply has to evoke that sound image and we can say 'cat' and you can hear me. But 'cat' isn't made up just with the units that we hear. There are three parts to it--C, A, and T. So we say those are the three parts of cat--c, a, and t. But then we say "No! no, no, they

are not really the parts. What it really is, is k, a, and t." But is it really k, a, t? No, it's not. Because in order to make those sounds I had to combine a stop and something that was operating as a vowel. You can't say a consonant by itself. You can only say it in combination with something else. So, what the alphabet represented was an abstraction, a kind of analysis that allowed the language spoken in that area of the world to be represented with an extreme degree of economy.

But we still have the problem of how to explain to kids what it is that happens when you go from k-at to 'cat.' All we can do to explain is to call it the process of blending. We stimulate it. We have a procedure. We start out slowly with k-at, k-at, saying it faster and faster: k-at, k-at. But blending doesn't work. No matter how fast I say k-at, I don't get 'cat.' That isn't what happens in reading the alphabetic representation of 'cat.' What happens is that there's a qualitative reorganization of the sound the teacher models. You start with the pieces, k-a-t. I think of it as a bird trying to get off the ground. The theory of blending tries to give the kid a start like a glider. You give the glider a push and if it just gets off there will be the right dynamic properties. Then the kids would do the synthesis, because to make use of the alphabet, you can't just have the analysis: that's how you arrived at it. You have to have analysis and synthesis. That's how you produce reading, and we can't communicate about it directly. I'll come back to that aspect of the problem because I think it's very important.

Consequences of the Alphabet

This analytic device provides enormous power. We are told that the alphabet made possible really new forms of organization of knowledge. In the middle ages and late middle ages it allowed the reclamation of vast sums of scientific work from an earlier era. When combined with the ability to smelt iron in certain ways the alphabet made the printing of Bibles possible. It supported an incredible notion for the time: you no longer had to mediate your interactions with God through Rome. (Which if you were German peasants didn't seem like a particularly reasonable thing to do under the circumstances.) You could do it, as they say, through the book. You could get directly to God through his word--The Bible.

Now, I'm not a political scientist and I don't understand all these things very well, but it seems that what we were buying in that analytic device was a great mode of cultural interaction and metaphors for living, which ended up in the 20th century producing the industrial mode of production. The argument is that the alphabet made possible modern science, modern democratic states and so on. On the other hand, you have mankind's recent achievements, the ability to send astronauts into space, see the other side of Venus and galaxies we can't imagine, as well as the power to look into your body at little pieces too small to imagine.

Alphabets and the Reduction of People to Numbers

The kind of science that we developed through the analytic principles of the alphabet allows us to be explicit, and to create models of reality that operate on high speed machines. We simulate learner systems, pull out main effects and do predictions of what's going to happen later with certain margins of error. I do not want in any way to underestimate or to denigrate the power of that way of operating in the world. But, that way of knowing the world comes at a great cost. There are a number of ways to think about what that great cost might be. First, there's this cost that has to do with education. This brings us back to a socio-historical approach to learning disabled kids. I

believe that the industrial mode of production is based upon a kind of scientific reduction which has a main effect (like an IQ score) and an error term. In such models, the error term is designed to be random; what we end up having, is the reduction of human value to a single number.

I'll take three countries to illustrate this: Japan, the Soviet Union and the United States. The ultimate embodiment of this reductionism in Japan is the score you get when you graduate from high school on a national examination. In the United States, I tell my Japanese colleagues "we don't know how to subordinate ourselves as well as you guys do, we have two numbers, verbal and quantitative." I haven't had a chance to talk to my Soviet colleagues about this idea yet. They would deny that they had one number and they would say that human values are distributed in a lot of ways. In certain times in their history they have been. That's certainly their ideology. But clearly one of the driving concerns that heads the Soviet education system today is the alienation of labor from the university. They have recreated classes based on educational attainment in response to the dominant need for efficiency in a modern industrial world.

What we find in the educational systems of this so called "information age" is that high scores on that one dimension more and more depend upon your ability to get access to, and to be skilled in, the uses of systems for coding information. Someone was joking at lunch about computers meaning a new level of alienation. I said that is absolutely right. Every step you put between human beings and their communication with each other requires a potential reduction of understanding between the two people. We do not have a good theory of all those reductions as yet. But we have a very powerful system for reducing.

Each country wrestles with this fact in their educational system. To the Japanese, the whole machine-based way of thinking is external, and new. The Russians think they have a theory that says that there's a great teacher who knows how to deal with all this technological stuff; they say they are too savvy to be fooled by technology. We in the

United States have a different way of dealing with the issue. We say that really it's the individual who is driving the system. We give everybody an equal chance and if you don't make it--it's because there's something the matter with you. We have three different countries; culturally and politically for the U.S.S.R. and Japan, the metaphors of analytic science are contrary to long standing traditions. But that doesn't seem to help. All three countries have the same problem: massive school failure, the problem of elaboration of bureaucracies, the problem of centralized control of many, many forms of individual life.

Now, here are the implications of a socio-historical approach within this kind of a contemporary framework. If research on reading is going to make a difference, it is going to have to start with an understanding of how this historical backdrop, how contemporary social-historical contexts, shape the nature of instruction and the production of school failure. It is done in the classroom, it is done at home, it is done on the way from the classroom to home, it is done in the workplace, it is done everywhere. It is systematic. If you're going to make a difference, you're going to have to be able to do it at many different levels of the system. I want to focus on the central role of the classroom teacher in this process of changing the system. First, let's consider what is a social-historical approach to the problem of curriculum, particularly the notion of basics.

To be concrete, I will discuss the idea of basic current theories of reading, identify units at different levels of the overall process. At a lower level there are features, then letters, words and finally a whole text. Each time we go "up" in the system, we get to a larger and larger set of materials. It has been traditional to break the processes involved in reading into two kinds, corresponding roughly to unit size: decoding and comprehension. Creating dichotomy is a process that our analytic traditions are good at doing. But dichotomies routinely produce a boring argument: Which comes first, decoding or comprehension? There are people who will go for phonics and decoding and there are other people who will go for basic construction of comprehension; everybody will show that the others are leaving out the essential half of the process. But the joke is

on us, because you know what our theoreticians are now telling us? My friends over in the Center for Human Information Processing who model reading processes on computers say, "We can demonstrate in infinite detail that any one level of the system is constructed of the interaction of elements operating on at least two different levels of the system. It takes three to tango: the two people and the system they create between them."

Now the question is, if you have any idea that reading requires two people and a system of agreed upon symbols, what do you do with it? My friends in the Center for Human Information Processing can simulate part of the process. The largest unit that they deal with is a single word. They can show that words can be broken down to the level of letters and features. So they can account for the process of letter identification at the top. I think that their theories are correct. I think they're modeling something very important. But they don't go far enough. Their theories and models break down when an adult is faced with a child who cannot read. This is where a socio-cultural approach can help us. We have documented how educators and psycholinguists try to teach reading to kids who failed to learn to read in school. Our tapes show the way in which, without special support systems, special cultural support systems, the individual teacher is at an enormous disadvantage in trying to get the kid over a major misunderstanding. The misunderstanding is that reading is reading individual words so that they sound right. Reading is reading aloud. The fundamental nature of reading, from a socio-cultural perspective -- that reading includes looking at the sign, knowing what's coming, knowing where you've been, knowing where somebody else is -- is absent for these children. Reading as a process of interpreting the world, is left out of the information processing theory altogether, and left out of systems of remedial reading instruction.

If you look at little children at home, children of different classes, you can find them getting different exposures to the real idea of what reading is about. They see

reading and writing modeled by their parents, embedded in settings they know something about, so that when they come to school, they encounter an early reading curriculum using that larger understanding that the parents held out for them at home. But then we see other children whose family members never got the understanding of reading-as-interpretation. They came to school with systematic misunderstandings. They're the 20%, and in San Diego its mandated 20%, whom teachers are allowed to lose. When you talk to the teachers about these kids they say, "my heart breaks for those six children. But if I were to really succeed with them, I'd lose the others." So the teacher is caught right there, trying to mediate between the failing child and those two systems: the system between the child and the world and the system of written language.

So how do you do analysis on this problem so that it's not just complaining? For a long time our work has been cross-cultural and what it helped to do was expose what it was that we were doing in the first place: the extent to which our science is really an ideology and engineering. A great deal of psychological research. It wasn't testing basic assumptions at all. In fact, we couldn't see the basic assumptions; they didn't calculate. What's so scary about this is that the Russians and the Japanese are doing the same thing. It's not that we don't know it. It's that somehow we can't embody that knowing in our social interactions with each other.

So what we are doing in our current research is showing that you can do something. We are trying to look at the children in a communicative system, not just view them in isolated activities whereby if they succeed in carrying out the activity, they are considered smart and if they fail, they are considered dumb. Our approach has been similar to that of Laura Bohanna who went off to work with the tiv. She is led to remark that anybody entering a new culture is a child again (Return to Laughter). You have to experience that. Otherwise, all you have is the ideology that they're really cute little folk and that maybe they'll grow up to be like you some day.

What we have done, practically speaking, in our current research, is to create artificial social systems using an interactional theory and using as a metaphor the processing models currently being used in cognitive psychology. We've said: let's instantiate an artificial social system. If this can be done, then in order for the reading process to occur, in order for a unit to be formed between two people and the printed word, then there have to be interactions from "above" and "below." The fundamental necessity of reading-as-interpretation of the world is that you hold in the image of reading as a whole; you hold in the constraints as a whole and then the acquisitions of the parts always come under those constraints. Then you'll never create a byway that will lead the kid into a wrong mediation of his activity with print that then has to be remediated.

What we did was to use the dramatic metaphor in a variety of different ways. Ann Brown and Joseph Campione down at the University of Illinois worked with the project and gave us one protocol to follow. Their work had to do with reciprocal questioning with seventh graders who were good decoders, but poor comprehenders. It involved setting up a dialogue about the main idea of a text between a good flexible tutor and a child: this dialogue eventually produced remarkable changes in those 7th graders' ability to read.

We changed the Campione-Brown procedures to fit our situations. We went to work with a population of poor readers from a public school. We ended up with 24 children in grades three, four, five and six. We did not want to classify them; we gave them all the standard tests that would allow you to discriminate who's LD from who's this or that. We then set up artificial environments to try to introduce them to the whole task of reading. We elaborated on the University of Illinois reciprocal questioning procedure. What we did was to take the two person game, elaborate it into the script of reading which included the following roles on three by five cards. Number one: jot down some words that are hard to say (meaning ones you don't know what the hell they are, but don't

have to say that). This is one card and it becomes one person's role. Another person has the role: jot down some words that are hard to say what they mean. Another person has the role: pick the answerer. Another person has the role: what's the main idea? Another person has the role: what's going to happen next? Now we are dealing with children for whom school is not teaching them to read. For these children teachers can be really hard to deal with: a teacher is a person who comes in and drills them on phonics and drawing in books and psycho-motor skills but they are not learning to read. The teacher is part of their public problem.

To help unlock the process, we bring in undergraduates, and we make those undergraduates big brothers and big sisters to those little kids. They don't know exactly what they're doing but that's okay. Neither do we and neither do the little kids. If you're going to have a drama, if you're going to have communication, you have to have several participants, and no communication takes place if everybody knows ahead of time exactly what's going to happen. We want communication to take place. There have to be disordinances, you have to be able to do adjusting. If you take the communication notion of what a script metaphor is about, it's not something you build in a machine, it's something you construct with people. So, we hand out the cards. It could be that there are two UCSD undergraduates and let's say three little kids at different levels. We don't know what's the matter with them, we don't know what they can't do (except they don't read much), we don't know what they are doing. We want to see if we can trap them into doing the whole task. And if we can get them into the whole task, we can then do the diagnosis. We can figure out what part of the whole task of reading these kids really don't do. We put them in an environment where they can use their intelligence to discover what the hell to do about a problem. We distribute the cards around and we hand out the text. There's no reading out loud.

Why won't we allow reading out loud? Because we discovered the same problem over and over again. The theory of reading that we subscribe to is the following: reading

is about interpreting the world. Therefore, when I'm reading I'm looking at the world and trying to figure out what's going on there and I'm using this print to help me. Maybe it's the world of my own future; it is certainly something I'm not reading for its own sake. There is no such thing as reading "for its own sake." Reading always is, eventually, about something to do with other people. Reading, as Friere said, is a way of theorizing about the world.

The children we work with have a different notion. Their notion is this: reading is a system of mediation restricting them and a text. In a particular question and answer frame where the questions are always given to them ahead of time, they only have to follow the learned grammatical and phonetic script. We found the following kinds of wonderful things happening: kids will read out loud, "John--accidentally--hung--himself--while he was playing after--school. The--police didn't know why--he did it." They go all the way through this. They pose questions about tough words. Someone picks the answerer. Then they arrive at the question, "what happened to John?" Written down on the page is "hung himself." They write the correct answer.

When a child reads aloud and it sounds correct, and then she correctly answers a comprehension question, the teacher has every right to conclude that the child is reading in the grownup sense of the term. But wait. In the next paragraph there is reference to a boy named Eric. We adults see immediately that Eric is a friend of John, the boy who hung himself. The young girl who displayed her reading ability a few minutes before starts calling for help. Ms. Griffin! Ms. Griffin! When Ms. Griffin appears the young lady complains. "How can I answer this question about Eric? He appears everywhere. It's not fair."

What we now suspect is that the previous "comprehension" wasn't what it seemed. Our suspicions are confirmed when, after working through the second paragraph, the girl exclaims incredulously, "Is this true? He hung himself?"

Our subsequent analysis shows that even when she delivered correct answers, this girl was not "reading with comprehension." She was seeking physical matches between words: where the same name appeared in several places, she denied the possibility that it could be part of a single answer. Only when her glances at the print were integrated into her real world knowledge did her reading activity come into contact with our usual concept of comprehension.

This scene is typical of systems of mediation for poor readers which are truncated, artificially truncated, and the kids can get incredibly good at operating in them. They can get so good at it that you actually think they can read. But they don't have the slightest notion of what the system of mediation we call reading is about. How will they come to have it? At this point, I want to go back to the alphabet and I want to go back to reductionism. And I want to go back to the question of remediation. The system of remediation most commonly used is one that goes back to the system of the basic unit again. It doesn't remediate the overall understanding of what reading is for; it instantiates the reductionist theory and the analytic strategy that grew up with the alphabet: Remediation goes from the simple to the complex. Of course you start with the simple. Only you've kidded yourself. Insofar as the child <u>completely</u> follows the procedures you're talking about, for example, sounding out K - A - T, there can be no progress.

In contrast, we argue that the procedures need to be taught as <u>cultural vehicles</u> to help children experience that emergent activity which will allow them to understand what you're talking about when you say reading.

The reductionist theory violates the fundamental principle that development always occurs within the framework of the whole. But psychologists and educators traditionally never teach reading as a whole activity embedded in a communicative system because it requires a social level of analysis that cannot be simulated on a computer. The activity of reading happens to have a social element in it and therefore our theory must also. It

is for this reason that a socio-historical analysis of what reading is is so important to understanding what it means to remediate this activity for some children, and what are the necessary conditions that guide its acquisition in the first place.

Now, it is not the case that people can get the idea of what reading is only if they go to school, and if their parents have been to school. And it is not that nobody can come to discover it in school. But, if you go and you look in San Diego, California at what gets taught, it is the bottom part of the basic activity of reading only. They don't get to the second part--the act of reading as a whole--until they get the first part, correct reading aloud.

First things first. What a socio-historical point of view shows us is that we should be trying to instantiate a basic activity when teaching reading and not get blinded by the basic skills. Skills are always part of activities and settings, but they only take on meaning in how they are organized. So, instead of basic skills, a socio-cultural approach talks about basic activities and instantiates those that are necessary and sufficient to carry out the whole process of reading in the general conditions for learning.

When we create such lesson contexts we find that the kids who can't read in fact can do it! Are they all reading, is this a miracle? Hell no, they have problems, a number of them have serious problems. For some you see across the board, successful take-off. Teachers report "a miracle has happened." For others, the kid is worse behaved in the classroom than he was before. He may have gained a deeper insight into just how deep a hole he's standing in. When a child sees another kid leap out and begin to experience success, he begins to have a better understanding of what a deep hole he's in and he goes down. That's development: we know that development isn't always achievement of fixed criterion. Development is system's reorganization. Reading requires social system's reorganization. From this perspective, you can teach kids to read who otherwise couldn't be taught.

There are some battles to be fought when endorsing this socio-historical approach to understanding literacy development. First, when you have people-acting-in-a-setting as the unit of analysis in psychological development, educational, experimental and child psychologists alike all take issue with such an idea. When I first started to develop these ideas at Rockefeller University, Neil Miller, who is an early teacher of mine, and a great experimentalist, said "I'm really surprised at you, Mike, for going into social psychology." When we go from having two adults in a room explicitly with a child, to having one, or the child alone with the machine, nobody understands that society is standing there as a silent partner. The child can only interact in a medium, and their medium is past history of experience with other members of the cultural group. So as a fundamental principle in our work, we put another cultural member in there. There are ways to have universities and elementary schools combine together in this sort of effort. Whether or not institutionally we could ever break loose the money having demonstrated what we can do, to actually teach the children how to read or not is a second question and an important one.

In our work we worry about how to establish credible evidence, how to be scientific. If we had two more hours I would talk about the struggles of turning video tape from what appears to be a demonstration total chaos into something that is analyzable and the analysis of which can be used to direct teaching activities.

Let me close by saying a little something about myself and thanking people in the last couple of days for the opportunity to both express my ideas and to encounter people doing things that I think are so marvelous. Starting with Bonnie's talk yesterday, I think that Erikson has a special role in showing what is possible. I think that is the most important thing this institution can do. To make your point, you have to do it at several different levels at once. That's why it's so easily defeating. I think the Center for Psycho-Social Studies also has this insight. You have to embody the cognitive science wisdom that says you need a minumum of three levels of the system in order to

understand any one of them. So, yesterday I was really pleased when Bonnie laid this all out. We've never met each other, but there was a common understanding of these things in our culture. There are, as they say, multiple voices shouting for attention. If you're going to effect change, you've got to have some theoretical vision of what you're doing. We've been there before. There is this saying: everything has been discovered before. The trick is to discover it again. It is an act of individual emancipation to discover well known truths again, because in each historical era the conditions for doing it, the resources for dealing with the problems, have shifted. The question that haunts us now is whether we can get ahead of our own human nature before it's too late.

The other great thing was to listen to Vivian Paley yesterday. Now here's where I have to speak to the question of the ideology of science. In my opinion, technically speaking, Vivian is doing experiments of the sort that my teacher, Alexander Luria, did seventy years ago. She is trying to uncover the basic logic of the system that is organizing the children's lives in the classroom, and trying to understand what it is the teacher must do to promote development. In a deep way, she is discovering her own ideology which has been organizing her classroom for years, and still organizes her classroom. Her self-reflectivity provides us a beautiful model of theory combined with practice. Yet she, herself, demeans the theoretical side of her work and disassociates herself from researchers. She's talking about those who are involved in reduction of science, those who would come in and try to take her system's understanding and render it in numbers and kill it by dissecting it. So, what do you do about that? Well, one of the things you do is you take institutions like Erikson and you find people like Vivian Paley. You find people who understand your vision of the world, your vision of the possible, and you try to connect them up. You try to get ahead of the game with a little bit of the resources you have and to read where in the society those kinds of things are going on. So you hire a young scholar like Gil McNamee and have her go through a training program with Vivian Paley and understand it. And you send her off to a theorist like me, and you

say to her, would you please put those two realms of ideas together and create innovative new systems? You train people who know how to talk to people in the community and listen to them the way Vivian listens to children: with respect, to learn about themselves. You work with the teachers who were caught in the impossible bind between the human system of control which is the ideal of education world-wide and the realities of a culture which has to select children out and reduce them to one number.